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ENVIRONMENTAL EDUCATION AND TRAINING PROGRAMMES AND STRENGTHENING OF NATIONAL INSTITUTIONS IN AFRICA

(A NOTE BY THE SECRETARIAT)

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I. INTRODUCTION

1. Environmental education and training and the need for manpower infrastructure development for environmental assessment and management in the African region is widely recognized. Since the Stockholm Conference on Human Environment 1972 several UN Organizations such as UNEP, UNESCO, ILO, WMO, UNICA, and WHO have had several activities regarding environmental education and training in the region. For example, UNESCO/UNEP Environmental Education Programme has been in existence since 1975, carrying out a variety of activities which address themselves to general environmental education of all citizens, through either the formal or the non formal educational systems. UNESCO Science Sector is concerned with the education of certain professional groups (e.g. engineers) and with the training of specialists at post-graduate level. Within this sector, several programmes address themselves to specific groups such as the International Hydrological Programme which carries out hydrology education activities. A major part of ILO's programme concerns the working environment which is recognized as being part of the general environment. Based upon a 1975 ILO resolution dealing with the improvement of working conditions for the environment ILO has been involved in environmental education and training as it relates to the work place. World Meteorological Organization (WMO) undertakes several specialized training activities for meteorological and air pollution personnel. This training programmes are based on expert meetings to indicate areas for which training is required. There are several divisions of the World Health Organization concerned with areas and activities related to environmental education such as environmental health, family health and public information. WHO has also convened several seminars dealing with the interdisciplinary aspects of health and education and has undertaken training programmes of environmental engineer.

2. The need for environmental training and education is widely recognized in Africa. The first Intergovernmental Conference on Environmental Education was held in Tbilisi (Georgian SSR, USSR) from 14 to 26 October 1977. 1/ This global Conference was organized by UNESCO in co operation with UNEP. The Tbilisi Conference on Environmental Education called on member States to

> Include in their educational policies measures designed to introduce environmental concerns activities and contents into their educational systems.
>
> Invites educational authorities to promote and intensify thinking, research and innovation in regard to environmental education.

3. Since the 1970s there have been several workshops seminars, and feasibility studies relative to the need for environmental education and training in the ECA region. These include (a) the workshop on Environmental Education and Training in Africa Universities convened by the Association of African Universities, sponsored

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1/ Environmental Education in the light of the Tbilisi Conference, UNESCO Education on the move.

by UNEP and hosted at the University of Nairobi, 3 to 9 December 1972 2/ (b) the African Curriculum Organization's (ACO) workshop on Environmental Education in School Curriculum sponsored by UNEP and hosted by the Curriculum Development Centre in Lusaka, Zambia from November 26 to December 7, 1979 3/ and (c) the World Health Organizaion s (WHO) report on Centre for Environmental Studies and Infrastructure, (WHO/AFRTR) Feasibility Study, 1981, 4/ whose observations and recommendations indicated the recognized need for an African Environmental Education and Training Programme.

4. In recognition of the importance of manpower development for the management and protection of the African environment the United Nations Environment Programme s (UNEP) Governing Council has passed several decisions relative to Environmental Education and Training in the African Region. UNEP/GC.9/12 decision of May 1981 identified environmental education and training and technical assistance as a priority for development. 5/ UNEP/GC.9/20/A of 26 May 1981. GC.9/20/D of May 26 1981 and GC.9/21 also of May 26 1981 all of these decisions made particular references to the importance of environmental education and training in Africa. Decision GC.9/20/D requested the Executive Director of UNEP to explore jointly with UNECA the possibilities of establishing a regional institution for environmental training and education within the African region and to seek ways and means of providing support for national institutions for environmental protection and management in Africa. Again in May 1982 UNEP Governing Council 6/ at its tenth session requested the Executive Director to enhance the role of the Environment Programme in promoting, co ordinating and catalysing activities in the field of environmental education and training in the African region including public awareness the decision also requested UNEP Executive Director in co operation with relevant international organizations, to continue rendering support to environmental education and training programmes in the African region with a view to:

(a) Advising on the incorporation of environmental components into curricula of all institutions of learning at all levels of education and into adult education

(b) Identify, promote and strengthen national, regional and subregional institutions and programmes offering environmental education and training in the African region.

2/ Summary Report - Workshop on Environmental Education and Training in African Universities December 3 to 9, 1978. By the Association of African Universities (AAU).

3/ Summary Report on Environmental Education in School Curriculum by the Curriculum Development Centre - Lusaka Zambia November 1979.

4/ Centre for Environmental Studies and Infrastructure Feasibility Study by Mr. J. Lanoix WHO Consultant Report (AFR/RT/191) 1981.

5/ UNEP Governing Council ninth session draft report. UNEP/GC.9/15 June 1981.

6/ UNEP/GC.10/L - Draft report of the Governing Council at its tenth session 25 May 1982.

5. This note by the Secretariat is therefore a summary of activities by UNEP ECA and AIHTTP regarding environmental education and the strengthening of national institutions in the African region.

II. Joint UNEP/ECA Mission Report on the Implementation on UNEP/GC.9/20/D on Environmental Education and Training

6. Pursuant to UNEP decision GC.9/20/D and directives regarding environmental education and training in Africa, a UNEP/ECA joint mission was conducted from April 19 to 30, 1982. The terms of reference of the joint mission were to consider:

(a) The status of environmental training and education in African Universities;

(b) The status of national institutions responsible for environmental protection and management;

(c) To explore the possibilities of strengthening environmental training and education and national institutions and

(d) To explore possibilities of establishing a Regional Institution for Environmental Training and Education.

7. The mission was limited to the period 19 to 30 April 1982 to consult with the following governments and organizations:

(a) Nigerian Federal Ministry of Housing and Environment in Lagos;

(b) the Association of African Universities (AAU) in Accra, Ghana;

(c) the Senegal Ministre de l'urbanisme, de l'habitat et de l'environnement as well as;

(d) the Environment and Development Action Institute (ENDA) in Dakar;

(e) the Kenya Ministry of Environment and Natural Resources in Nairobi including the

(f) National Environmental Secretariat and the Permanent Mission of Kenya to UNEP.

Contacts were also established with the African Network of Scientific and Technical Institute (ANSTI) in Nairobi and the African Curriculum Organization based in Ibadan.

8. Regarding the state of the art of environmental education and training at existing African Universities, the mission observed that there are a cross section of environmentally-related degree programmes at most of the existing universities in Africa. For example the University of Assiut, Assiut, Egypt has a degree programme comprising of public health, geology, botany and industrial pharmacy which are all environmentally related. As a whole, most African Universities should cover a study of environmental concerns in the various traditional academic departments such as engineering, medicine, agriculture, geology, botany, zoology, geography, etc.

9. The mission also observed that what is lacking in the African region, is an interdisciplinary environmental education and training programmes which would incorporate the various related academic disciplines. Few universities in Africa have taken the

interdisciplinary approach to environmental education such as, the University of Khartoum, Master os Science Course in Environmental Studies which has been in existence since July 1979. The following are the core courses of the two semesters Master of Science Programme in Environmental studies at the University of Khartoum

(a) First Semester Core Courses:

- Principles of environmental science
- Applied climatology and geomorphology
- Cartography and remote sensing
- Community health and demography
- Environmental economics
- Basic statistics for environmental research

(b) Second Semester Core Courses

- Environmental assessment, management and planning
- Rural development
- Environmental law
- Applied ecology
- Production technology engineering and the environment
- Methods of environmental research and assessment.

10. The mission also noted that the infrastructure for environmental protection and management does exist in most African countries but the responsibilities are spread out through several governmental agencies. What is lacking are centralized national institutions for environmental protection and management at the national levels. The countries visited by the mission seem to be the exception in that two of the countries have a single centralized environmental protection and management machinery. Ghana has the Environmental Protection Council, and Kenya the National Environmental Secretariat under the Ministry of Environment and Natural Resources.

11. Based on discussions held in countries visited and literature consulted during the mission, the following conclusions are drawn regarding the subject matter.

(a) On the possibilities of establishing a regional institution for environmental training and education, the consensus which emerged from the consultation is that presently, the establishment of a Regional Institution for Environmental Training and Education is not a priority taking into account

(i) The decision of the Second Extraordinary Session of the Heads of States and Governments of the OAU regarding guidelines in the Lagos Plan of Action relating to the establishment of new institutions was brought ot the attention of the mission and it reads 'no new multinational institutions should be created unless their creation has been thoroughly examined and after the possibilities offered by national institutions or existing multinational institutions have first been fully considered'

(ii) It was stressed that because of the interdisciplinary nature of environmental training and education the establishment of a single purpose regional institution to cater for all fields would not be cost-effective

(iii) It was also pointed out that regional institutions have a natural tendency to take on the national character of the place of location, therefore, this could create a problem regarding financial contributions from other member States who could perceive the institution as national instead of regional.

(b) In the need to strengthen national institutions for environmental protection and management, it was pointed out to the mission that UNEP, UNECA and OAU could help by:

(i) Providing technical assistance to establish environmental protection and management machinery where they do not exist;

(ii) Encourage governments to centralize environmental protection and management activities at the national levels;

(iii) Establishing environmental continuing education and public service programmes targeted to extension workers in the building, forestry, agriculture, and mining industries, health and sanitation;

(iv) Developing educational programmes in the area of environmental awareness for - governmental officials, decision makers and the general public. This point was stressed in all the countries visited. It was stated that there is a strong lack of public awareness of environmental protection and management as a whole in the region.

12. The mission recommends the establishment of a Single co-ordinating Body (a small secretariat) whose objectives could be

(a) To foster the development of environmental education and training programmes to meet the manpower needs of environmental protection and management in the region;

(b) Create and co-ordinate a network of institution at national levels for the purpose of providing two distinct environmental education and training programmes in the region, namely:

(i) Environmental Continuing Education and Public Service Programmes targeted to extension workers and staff of the building, mining, agriculture and forestry industries, health and sanitation workers

(ii) To identify existing universities and institutions of higher education at the national levels with suitable infrastructure for the development of interdisciplinary environmental education and training leading to professional degrees in Environmental Studies.

III. Joint AIHTTR/WHO feasibility study for a centre for environmental studies and infrastructure

13. Presently, the African Institute for Higher Technical Training and Research (AIHTTR) located in Nairobi, Kenya, a UNECA-sponsor institution, has within its planned programme a Centre for Environmental Studies and Infrastructure which emphasizes environmental education and training in the African region. The planned centre for environmental studies and infrastructure is one of the ten centres plann d within the framework of the (AIHTTR), the other are:

(1) Technical teacher/educator/instructor training centre;
(2) Centre for electromechanical engineering;
(3) Centre for engineering and food technology;
(4) Electronics and communications technology centre;
(5) Inter-disciplinary industrial production centre;
(6) Business and social studies centre;
(7) Physical and medical sciences centre;
(8) Centre for chemical and non-metaliferous technologies;
(9) Centres for natural energy resources and minerals exploitation and
(10) Centre for environmental and infrastructural studies.

14. In 1980, WHO funded a feasibility study 7/ whose purpose was to consult with the Director-General of the African Institute for Higher Technical Training and Research (AIHTTR) on the further planning of the Centre for Environmental Studies and Infrastructures, to be created. The terms of reference of the study were:

(a) To work out the general guide-lines, objectives and target groups for training;

(b) To design an appropriate curriculum and outline the scope and contents of courses at different levels of certification and training, including research;

(c) To recommend appropriate equipments and teaching aids and the requirements of the teaching staff; and

(d) To discuss his draft proposals with other curriculum development experts, who will be planning the other centres in AIHTTR listed above.

15. After discussion with the Director General of AIHTTR, it was agreed that the consultant would concentrate on the "Environmental Studies" component activities, and that, to the extent possible and subject to available time the consultant would attempt to develop the following five points mentioned in AIHTTR's brief, concerning:

(a) Types and contents of programmes to be serviced and operated by the centre in the light of the needs in the continent of Africa and of the institute's philosophy;

7/ WHO Consultant report AFR/EH/191, 1981. Centre for Environmental Studies and Infrastructure Feasibility Study by J. Lanoix.

(b) Facilities in Kenya (Nairobi especially), and more generally in all East African countries for the types and levels of courses required;

(c) Availability of the above to the institute and on what terms and arrangements;

(d) Supplementary resources to the above;

(e) Provisions and services that may be required in or shared with other centres.

In addition to the AIHTTR documents supplied, the consultant collected and reviewed a voluminous documentation covering chiefly the teaching and organization of environmental control and administration in Kenya and other African countries.

16. The consultant recommended that, at the initial stages of the centre, the following two broad areas should be emphasized:

(a) Environmental protection (meaning control and assessment) comprising of:

- Environmental engineering; water supply and waste disposal; environmental pollution; and

(b) Environmental management comprising of:

- Environmental health; environmental administration and control.

The centre should concentrate on a limited number of issues, avoiding as far as possible duplication with other African training and research institutions. The centre's efforts should concentrate on technical training, limiting its research and the training of research specialists to the strict minimum during its first ten years of operation. The categories of personnel to be trained should be as follows:

- Environmental health officers, at B.Sc. level
- Environmental engineers: water supply and waste disposal, pollution control, at undergraduate (B.Sc.) and graduate levels (M.Sc.)
- Environmental management specialists: Environmental administration and control, and environmental health at graduate level(M.Sc.).

10. The graduate programmes should cover one full year, with fulltime attendance, and should include theoretical and laboratory classes and demonstrations, field work, seminars and a written report on a technical investigation. Research as such, should not be a requirement for the M.Sc. degree. No "Diploma" course should be offered by the centre.

18. The consultant pointed out that member States should make arrangements to train technicians within their own countries. And so, a major effort should be made, without delay, by the AIHTTR in collaboration with ECA's member States to carry out manpower surveys, so as to ascertain the exact

types and numbers of personnel required and the training curricula to be adopted. Besides its academic activities, the centre should carry out a continuing education programme and an on-the-job training programme.

19. The centre should establish co-operation agreements with African institutions and Universities engaged in training and utilization of environmental personnel, in order to achieve co-ordination of programmes, to provide for effective field training of technical students, to secure the services of experienced, part-time visiting lecturers and to arrange for continuing education. In particular, agreements and continuing work relationships should be developed with the new school of environmental studies being established at the University of Nairobi with the assistance of the Canadian International Development Agency (CIDA); the Kenyan Ministry of Environment and Natural Resources and its National Environment Secretariat, and with their counter parts in other African countries; the Kenyan Ministry of Water Development, especially with its Water Resources Training Institute, and with its counter parts in other African countries; the relevant Faculties of the University of Nairobi and of the second Kenyan University now under establishment; the Kenyan Polytechnic; the Kenyan Ministry of Health's Medical Training Centre; the Kenyatta University College.

20. The consultant suggested that the name of the proposed centre should be changed from "Centre for Environmental Studies and Infrastructures" to Centre for Environmental Management and Infrastructures. A mechanism should be set up for updating such surveys on a regular basis, so as to enable the AIHTTR's centres to keep attuned to rapidly-evolving environmental conditions in the countries served.

21. According to the consultant, two major categories of environmental problems can be identified in African countries: Those concerned with environmental control and those concerned with environmental protection. In controlling the environment, men pursue their ancient search for ways of protecting themselves against "diseases of underdevelopment", natural hazards and disasters. In protecting the environment, they search for ways of avoiding the damage or depletion caused by their own demands on it. In both instances, the application of scientific principles of ecology, chemistry and biology, in support of environmental engineering and of environmental management measures, are essential for reaching the objectives sought. Among environmental control measures, by far the most important in Africa in the present decade is the provision of safe drinking water supply and sanitation to communities.

22. Environmental engineering is concerned with the identification of environmental problems and their social impact; the examination of the various causes of environmental problems; the evaluation of the engineering aspects of man's interactions with the natural and man-made environment; participation in the design of development strategies which should satisfy human needs and protect the environment; and contribution to multi-disciplinary efforts in relation to development planning. It will be noted that the functions

of the environmental engineer under the UNESCO definition are fully consonant with those identified in 1974 by WHO for the "health-oriented" engineer in the assessment and control of environmental conditions and hazards that affect man's health.

23. Environmental management describes the actions of those involved in decision-making who make a deliberate and systematic attempt to understand the effects of their activities on the environment and vice versa. Those persons would strive to make explicit the values involved, the objective information available, and the trade-offs that would be necessary. They would then attempt to resolve the issues within the relevant public and private decision-making spheres. Such actions are in contrast to those who pursue single-mindedly one set of societal objectives with no consideration of environmental values or those who pursue narrowly-defined conservation goals with no attempt to analyse the major changes that would occur in society as a consequence of radical changes in the status quo of human activities and societal development. Thus environmental management is a positive concept - not a negative "Halt progress" or "Back to nature" concept. Some of the key aspects involved are:

- Identification of the "needs" and "wants" of man in his individual and social development;
- Identification of the resources that are needed for such development;
- Identification of how meeting some needs and wants will inhibit or increase the ability to meet others as a result of the destruction, degradation, or enhancement of resources;
- Identification of the actors who have a stake in the conflicts that may arise between meeting needs and protecting resources;
- Resolution of these conflicts.

24. To conceive, plan, implement and manage the programmes of environmental control and of environmental management which, without the shadow of a doubt, will continue to expand during the next decades, African countries need to take early action in training the manpower required. The time required to prepare professionals, particularly if the education facilities need to be created, is so long that the development of the educational facilities, is a matter of the greatest urgency. In this respect, the early establishment by the AIHTTR of its proposed centre would help to fill one of the greatest needs in Africa today.

IV. SUMMARY AND RECOMMENDATIONS

25. The Secretariat is recommending that it is now appropriate to establish a single focal point at the African regional level relating to environmental education and training programmes. The data has indicated that environmental education and training activities exist within several United Nations Organizations. What is lacking is the establishment of an inter-disciplinary

academic degree programmes either at the regional, subregional or at existing national institutions of higher education (universities) geared toward training the required breed of African environmental managers. The Secretariat, therefore, endorses the findings and recommendations of the joint WHO/AIHTTR consultant report regarding the "Centre for Environmental Studies and Infrastructure Feasibility Study". The centres programme activities should emphasized and be limited to:

(a) Training of environmental specialists at the master and doctorate levels;

(b) Promoting environmental educational research and development;

(c) The role of acting as a catalyst and focal point at the regional level for the strengthening of national institutions of higher education (universities to provide environmental education and training activities at the national levels for the following clientele:

(i) Environmental continuing education and public services, (in-service training and short courses); and

(ii) Environmental education and training programme leading to the BS level - (undergraduate) and for technicians.

26. The Secretariat also recommends the establishment of the Single Co-ordinating Body for environmental education and training in Africa between UNEP, ECA, UNESCO, ILO, WMO, WHO, AIHTTR and OAU at this meeting or as early as possible. The terms of reference of the co-ordinating body will be as outlined in paragraph 11 above as well as the following:

(a) Exchange of information on activities in environmental education and training in the African region; and

(b) By means of joint actions and activities to implement the findings and recommendations of the AIHTTR/WHO consultant report and the joint UNEP/UNECA mission report.